



RAILROAD COMMISSION OF TEXAS

OFFICE OF GENERAL COUNSEL

RULE 37 CASE NO. 0266558
District 09

APPLICATION OF XTO ENERGY, INC. FOR A RULE 37 EXCEPTION FOR THE SUE BARNETT UNIT, WELL NO. 4H, NEWARK, EAST (BARNETT SHALE) FIELD, TARRANT COUNTY, TEXAS

APPEARANCES:

FOR APPLICANT:

David Gross
Raul Flores
Robert Paul Horton
Sherman Young
Rick Johnston

APPLICANT:

XTO Energy, Inc.

FOR PROTESTANTS:

Eric Camp
Caroline A. McClimon

PROTESTANTS:

David Kieffer
Laina Kieffer
Hong Kim Bui

PROPOSAL FOR DECISION

PROCEDURAL HISTORY

DATE APPLICATION FILED:	July 9, 2010
DATE OF NOTICE OF HEARING:	December 14, 2010
DATE OF HEARING:	January 24, 2011
HEARD BY:	James M. Doherty, Hearings Examiner Richard Atkins, Technical Examiner
DATE TRANSCRIPT RECEIVED:	February 8, 2011
DATE OF APPLICANT'S LAST SUBMISSION:	February 10, 2011
DATE PFD CIRCULATED:	April 26, 2011

STATEMENT OF THE CASE

XTO Energy, Inc. ("XTO") seeks an amended drilling permit pursuant to the provisions of Statewide Rule 37 for the Sue Barnett Unit, Well No. 4H, a proposed horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas. Appendix 1 to this proposal for decision is a copy of XTO Exhibit No. 6 which is a plat of XTO's 587.956-acre Sue Barnett Unit showing the proposed location of Well No. 4H. Well No. 4H will be a second well on the unit, and the Appendix 1 plat also shows the location of the one existing well on the unit, Well No. 1H. The Appendix 1 plat also shows the tracts within the boundaries of the Sue Barnett Unit that are unleased tracts.

As proposed in the Form W-1 (Application for Permit to Drill, Recomplete, or Re-Enter), the surface location of the proposed well is 2,031 feet from the north line and 603 feet from the east line of the Sue Barnett Unit and 2,006 feet from the north line and 635 feet from the east line of the Rouche, P. Survey, A-1339, Tarrant County. The terminus of the proposed well is 346 feet from the north line and 330 feet from the east line of the Sue Barnett Unit and 323 feet from the north line and 2,250 feet from the west line of the BBB&C RR. Co. Survey, A-203, Tarrant County. The penetration point of the proposed well is 1,220 feet from the north line and 1,583 feet from the east internal corner line of the Sue Barnett Unit as shown on the plat associated with the Form W-1.

Special field rules for the Newark, East (Barnett Shale) Field provide for 330 foot lease line spacing. A Rule 37 exception is needed for the proposed Sue Barnett Unit, Well No. 4H because the section of the well proposed to be perforated is closer than 330 feet to the boundaries of certain tracts internal to the Unit that are unleased. The application is opposed by owners of two unleased tracts which, according to XTO's consulting petroleum engineer, are 86 feet and 197 feet, respectively, from the section of Well No. 4H proposed to be perforated. The examiners recommend that the requested exception be granted, but for a location which places the penetration point and terminus of the well 20 feet closer to the easternmost south line of the Unit, and that much further away from the protestants' unleased tracts.

DISCUSSION OF THE EVIDENCE

XTO Energy, Inc.

Special field rules for the Newark, East (Barnett Shale) Field provide for 330' lease line spacing. As to horizontal wells, where the horizontal portion of the well is cased and cemented back above the top of the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the distance to the nearest perforation in the well, and not based on the penetration point or terminus. Where an external casing packer is placed in a horizontal well and cement is pumped above the external casing packer to a depth above the top of the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the top of the external casing packer or the closest open hole section in the Barnett Shale. The

standard drilling and proration unit for the Newark, East (Barnett Shale) Field is 320 acres. An operator is permitted to form optional drilling units of 20 acres.

At the time of filing of XTO's Form W-1 application, XTO had 484.7995 acres under lease within the boundaries of the Sue Barnett Unit. Since that time, additional acreage has been leased and the Unit has been enlarged. The XTO Exhibit No. 6 plat in Appendix 1 to this proposal for decision depicts the expanded unit, as it existed as of the date of the hearing. There are 703.514 acres within the perimeter of the expanded unit, of which 587.956 acres are under lease to XTO and pooled into the Unit. The Appendix 1 plat shows the boundary of the expanded unit and the boundaries of separate tracts within the perimeter of the Unit. Unleased tracts within the perimeter of the Unit are cross-hatched on the plat, and the two unleased tracts in which the protestants have an interest are shown in red.

On the Appendix 1 plat, 330 foot "bubbles" are drawn around all unleased tracts, and a 330 foot buffer is shown around the perimeter of the Unit. Shown in yellow on the plat are so-called "regular" locations within the perimeter of the Unit, that is, leased areas of the Unit that are 330 feet or more from any unleased tract internal to the Unit and also 330 feet or more from the external Unit boundary. The Appendix 1 plat also shows existing Well No. 1H which has been drilled north-to-south in the southeast corner of the Unit, and proposed Well No. 4H, which is to be drilled from the same surface location as Well No. 1H in a southwest to northeast direction in the northeastern "neck" of the Unit. There are at least six unleased tracts within the perimeter of the Unit, all lying to the north of the track of proposed Well No. 4H, that are closer than 330' to the section of proposed Well No. 4H that will be perforated.¹ The Sue Barnett Unit is located in the City of Arlington. The surface usage of the acreage within the perimeter of the Unit is primarily residential.

The proposed surface location for Well No. 4H is said to be the only surface location available to XTO for the drilling of wells on the Sue Barnett Unit, that is, the only surface location approved by the City of Arlington. XTO applied to the City of Arlington for another surface location in the northwest portion of the Unit, but was denied. According to XTO, there are no off-unit surface locations available to XTO from which wells on the Sue Barnett Unit could be drilled.

XTO made multiple attempts to lease all of the unleased tracts within the perimeter of the Sue Barnett Unit, but was not successful in leasing these tracts. In 2008, XTO agreed to offer to lease properties in the Southeast Arlington Communities of Texas area on terms that included a bonus of \$26,500 per net mineral acre and a cost-free 26.5% royalty. This offer was rescinded in about October 2008 because of the "general global economic meltdown" and a dramatic decline in

¹ The track of proposed Well No. 4H is 350 feet from the southern boundary of the Unit. XTO's landman testified that there is no "land reason" why the proposed well could not be moved 20 feet to the south, in which case it would still be "regular" to the southern Unit boundary, but further away from unleased tracts within the perimeter of the Unit. XTO's geologist testified that the Barnett Shale is present and productive at this alternative location. XTO's drilling engineer testified that there is no engineering reason why the well could not be drilled at this alternative location.

gas prices. Since that time, XTO has offered lease bonuses in the \$2,500 to \$6,500 per net mineral acre range. The most commonly expressed reason for refusal to lease of the owners of unleased tracts within the area of the Sue Barnett Unit has been dissatisfaction with the lease terms being offered currently as compared to the better lease terms offered in early 2008. XTO remains willing to lease the two tracts in which the protestants have an interest on terms that include a \$4,500 per net mineral acre bonus and a 25% royalty.

As proposed, Well No. 4H would have a drainhole length of 2,359 feet. If this well were restricted with “no perforation zones” to place all perforations in the well at least 330 feet from all unleased tracts within the perimeter of the Sue Barnett Unit, only 498 feet of the drainhole could be perforated. If the well were restricted with “no perforation zones” to make perforations in the well at least 330 feet from just the two unleased tracts in which the protestants have an interest, only 1,289 feet of the drainhole could be perforated.

Based on a structure map on the base on the Barnett Shale and structural and stratigraphic cross-sections, a XTO geologist testified that average thickness of the Barnett Shale beneath the Sue Barnett Unit is about 470 feet, and the Barnett Shale is present and productive throughout the area of the Unit.

XTO’s consulting petroleum engineer calculated current recoverable reserves beneath the Sue Barnett Unit based on a traditional volumetric calculation performed by Devon Energy & Production Company, L.P. in a 2005 Barnett Shale field rules hearing before the Commission in Oil & Gas Docket No. 09-0243843. Devon’s study developed a gas in place calculation of 139 BCF per square mile (640 acres) for Tarrant County based on reservoir thickness of 433 feet. Reservoir thickness in the area of the Sue Barnett Unit is about 470 feet. For the 587.95 acres under lease to XTO within the perimeter of the Sue Barnett Unit, gas in place is about 138.6 BCF, and based on a 30% recovery factor, XTO’s consulting petroleum engineer estimated recoverable gas in place of 41.6 BCF. Recoverable gas beneath the two tracts in which the protestants own an interest is estimated to be 17,327 MCF in the case of the Kieffer tract and 14,640 MCF in the case of the Bui tract.

XTO’s consulting petroleum engineer performed a study of all Barnett Shale wells within five miles of the terminus of the proposed Sue Barnett Unit, Well No. 4H, plus 1,000 feet. There are 52 Barnett Shale wells within this study area that had adequate production history and completion information to be included in the study. Estimated ultimate recoveries were calculated for these wells by decline curve and data was also compiled regarding the perforated lateral length of each well. From this information, a plot of estimated ultimate recovery versus drainhole length was generated and a computer generated least squares regression of the data points on the plot developed a line through the data points with a positive slope of 0.658. The implication of this study is that every foot of horizontal drainhole ultimately will recover 658 MCF of gas.

Based on the regional recovery of wells within the study area, XTO projects that the one existing well on the Sue Barnett Unit, Well No. 1H, will recover about 0.961 BCF of gas. Only two

of the Barnett Shale wells with the study area will recover as much as 6.0 BCF. Most of the wells in the study area will recover gas in the 1.5 BCF to 3.0 BCF range. There are a number of poor wells in the study area with estimated ultimate recoveries of less than 1.0 BCF, which XTO's consulting petroleum engineer attributed to the presence of a north-south oriented fault east of the Sue Barnett Unit shown on XTO's structure map. Based on regional recovery of 658 MCF of gas per foot of horizontal drainhole, if proposed Well No. 4H can be perforated along the entire length of its 2,359 foot drainhole, it will recover an incremental 1.2 BCF of gas as compared to what the same well would recover if restricted by "no perforation zones" making all perforations in the well at least 330 feet away from any unleased tract.

XTO's consulting petroleum engineer made an economic evaluation of wells that hypothetically might be drilled at "regular" locations on the Sue Barnett Unit from the only available surface location. Appendix 2 to this proposal for decision is a copy of XTO Exhibit No. 31 which is a plat showing hypothetical wellbore pathways to reach the areas of "regular" locations on the Unit. Some of these hypothetical wells would be considered wells at "regular" locations because they do not traverse any unleased tract and are landed in areas of "regular" locations, while other wells shown on the plat would require traversal of unleased tracts in order to reach "regular" locations.

Proposed Well No. 4H, could be drilled at a "regular" location if "no perforation zone" restricted such that no perforations would be any closer than 330 feet to an unleased tract. This would permit only 481 feet of drainhole to be perforated. Based on regional recovery of 658 MCF per foot of horizontal drainhole (plus the intercept shown on XTO's plot of estimated ultimate recoveries versus drainhole length), this "no perforation zone" restricted well would recover only about 0.36 BCF of gas, and would cost \$2,041,000 to drill and complete. Assuming a gas price of \$4.50 per MCF and operating expense of \$3,500 per month, the well would not pay out the cost of drilling and completing the well and would have a cash flow shortfall of \$1.2 million – that is, the well would have a zero rate of return. Present value of the well discounted at 10% would be a minus \$1,326,000.²

Another well that might be drilled at a "regular" location is a horizontal well drilled north-south from the only available surface location to the west of and paralleling the existing Sue Barnett

² There is disagreement between XTO and protestants as to the reasonableness of the \$4.50 gas price assumption made by XTO's consulting petroleum engineer in his analyses of whether wells that might be drilled to "regular" locations on the Unit would be "economic." The \$4.50 gas price assumption was based on annualized average gas prices over the previous 12 months. Protestants questioned this assumption based on a section of the Annual Energy Outlook-2011 of the U. S. Department of Energy Information Administration which showed a gas price below \$4.50 through 2013 and below \$5.00 out through 2016, but also showed prices up to \$8.32 in 2029. XTO's consulting petroleum engineer defended the \$4.50 gas price assumption by saying that due to his present value discounting, a difference in gas price has very little effect out beyond about 8 years, and, in any event, most of the gas that the hypothetical wells would be expected to produce would be produced in the first 2-3 years, where the Annual Energy Outlook-2011 data generally agrees with the \$4.50 gas price assumption.

Unit, Well No. 1H. This well would have an estimated drainhole length of 1,601 feet and, based on regional recovery, would be expected to recover about 1.09 BCF. The cost to drill this well is an estimated \$2,497,000. The discounted present value of the well is minus \$349,000. The well would pay out the cost to drill and complete the well, but the rate of return would be only 2.69%, and pay-out would be over a period of about 8 years. XTO's consulting petroleum engineer would not expect that any operator would drill such a well given the anticipated rate of return.

Another horizontal well might be drilled from the only available surface location and landed in the largest area of "regular" locations shown on the Appendix 2 plat in the northwestern area on the Sue Barnett Unit. This is the so-called "smile" well, named for its configuration, shown on XTO Exhibit No. 18 plat which is attached to this proposal for decision as Appendix 3. According to XTO's drilling engineer and its consulting petroleum engineer, this well would be very risky and expensive to drill. To avoid intervening unleased tracts, this well would need to be drilled with a 25 degree tangent, creating torque and drag problems. The further out this well might be drilled, the more difficult it would become to control the direction of the well, and running casing in the well would also be a problem. Using rotary steerable tools to drill the well would cost \$27,000-\$30,000 per day, and XTO believes there would still be a risk of an unintentional trespass on nearby unleased tracts. This well could be perforated only in the "regular" location area, meaning the well would have a perf zone of 1,974 feet. The estimated cost to drill this well would be \$3,091,000, which XTO's consulting petroleum engineer believes is a "lowball" estimate. Based on XTO's regional recovery study, the estimated ultimate recovery of the well would be about 1.3 BCF. If no problems were encountered in drilling the well, the well would pay-out the cost of drilling and completing the well, but the discounted present value of the well would be minus \$455,000, and the rate of return would be 2.7%.

A vertical well might be drilled from the only available surface location to the small patch of regular locations shown on the Appendix 2 plat immediately to the north of the surface location. This well would need to be drilled directionally to reach the "regular" location area and then be drilled vertically through the Barnett Shale. Based on XTO's regional recovery study, this well would recover about 0.35 BCF. The estimated cost to drill the well would be \$1,993,000. The discounted present value of the well is minus \$1,312,000. This well would not pay-out the cost to drill and complete the well and so would provide a zero rate of return.

A vertical well might also be drilled to another small patch of regular locations shown on the Appendix 2 plat to the northwest of the surface location. Based on XTO's regional recovery study, this well would recover an estimated 0.35 BCF. The cost to drill the well is an estimated \$1,995,000. The discounted present value of the well is minus \$1,312,000. This well would not pay-out the cost to drill and complete the well and so would provide a zero rate of return. XTO's consulting petroleum engineer could not find that any vertical wells had been drilled within five miles of the terminus of proposed Well No. 4H, and, according to this engineer, it is recognized that vertical wells "don't work" in this area of the Barnett Shale.

It would not be possible to drill other wells from the only available surface location to the limited areas of regular locations shown on the Appendix 2 plat without the need to traverse tracts that are presently unleased. XTO's consulting petroleum engineer believes that the combination of vertical wells and horizontal wells that hypothetically might be drilled from the surface location to the limited areas of "regular" locations on the Sue Barnett Unit, even if they could be drilled economically, would not enable XTO to recover its fair share of reserves beneath the Unit.

Well No. 4H, as proposed to be drilled by XTO, would have drainhole length of 2,360 feet, and based on XTO's regional recovery study, the well would recover about 1.6 BCF. The cost to drill this well is \$3,013,000. Discounted present value of the well is \$114,500. This well would have a return on investment of 11.9%.

Protestants

The protestants David and Laina Kieffer and Hong Kim Bui, appeared at the hearing through their attorneys, who cross-examined XTO's witnesses, but did not appear in person or present any evidence, other than through one cross-examination exhibit. Protestants' counsel argued that regular locations exist on the Sue Barnett Unit where wells could be drilled to recover a significant amount of reserves and provide XTO with an opportunity to recover the gas beneath the Unit. Protestants assert that the fact that regular or less irregular locations would not be economic is not a ground for approval of a Rule 37 exception, because an operator is not guaranteed a well that meets the operator's self-imposed criteria for economic viability. Protestants also contend that operators and the Commission created "no perforation zones" as a mechanism to protect correlative rights in the Barnett Shale.

EXAMINERS' OPINION

An owner of oil and gas is entitled to an opportunity to recover the reserves underlying his tract, and any denial of that opportunity amounts to confiscation. *Atlantic Refining Co. v. Railroad Commission*, 346 S.W.2d 801 (Tex. 1961); *Imperial American Resources Fund, Inc. v. Railroad Commission*, 557 S.W.2d 280 (Tex. 1977). When the subject tract is capable of supporting a regular location, the applicant for a Rule 37 exception based on confiscation must prove that the proposed irregular location is necessary because of surface or subsurface conditions and that the proposed location is reasonable. To do this, the applicant must show that it is not feasible to recover its fair share of hydrocarbons from regular locations.

The examiners are of the opinion that XTO proved that the requested Rule 37 exception is necessary to prevent confiscation. Proposed Well No. 4H is a second horizontal well on the 587.956-acre Sue Barnett Unit. Current recoverable reserves beneath the Unit are estimated to be 41.6 BCF, assuming a 30% recovery factor. Based on recovery of Barnett Shale wells in the region, the existing horizontal well on the Unit, Well No. 1H, will recover only about 0.961 BCF of gas. Given the unleased tracts that obstruct the drilling of horizontal wells from the only available surface

location, there are only three horizontal wells that hypothetically might be drilled to reach the limited areas of the Sue Barnett Unit that are “regular” to all surrounding mineral property lines without traversing any unleased tract. Proposed Well No. 4H would be “regular” if drilled with “no perforation zones” placing all perforations in the well at least 330 feet from any unleased tract, but if thus restricted, only 498 feet of the drainhole could be perforated and, based on regional recovery, the well would recover an estimated 0.36 BCF of gas. The other two horizontal wells that hypothetically could be drilled to reach other “regular” locations on the Unit would have perf zones of 1,601 feet and 1,974 feet, respectively, and based on regional recovery would recover 1.09 BCF and 1.3 BCF, respectively. Drilling of vertical wells does not appear to be a conventional method of developing the Barnett Shale in this particular region, but even if were, the two vertical wells that hypothetically could be drilled at regular locations without traversing any unleased tract would be expected to recover only about 0.35 BCF each.

There is considerable reason to doubt that any of the so-called “regular location” wells actually would be drilled given their economics and, in some cases, operational difficulties, but disregarding economic factors altogether, the wells that hypothetically could be drilled at “regular” locations collectively would recover only about 3.45 BCF, as compared to the 41.6 BCF of recoverable gas beneath the Sue Barnett Unit. It is perfectly obvious that wells at regular locations will not provide XTO and its lessors with a reasonable opportunity to recover their fair share of gas from beneath the Unit.

The examiners have considered the correlative rights of the protestants in their unleased tracts, but these rights must be weighed against the correlative rights of XTO and the several hundred of its lessors that have been pooled into the Sue Barnett Unit. XTO made an attempt to lease the protestants’ tracts and include them in the Unit, and has represented that it is still willing to lease these tracts on terms that are comparable to the terms on which other owners in the Unit have leased since October 2008. Protestants are thus not without a remedy to protect their correlative rights. The examiners have also considered protestants’ suggestion that proposed Well No. 4H could be “no perforation zone” restricted in a manner that would make the well regular to protestants’ tracts. However, these “no perforation zones” would mean that no more than 1,289 feet of the drainhole could be perforated. This would leave about 0.7 BCF of gas unrecovered that would otherwise be recovered by Well No. 4H as proposed to be drilled and completed by XTO. This compares to about 31,967 MCF of recoverable gas beneath protestants’ tracts. Encumbering Well No. 4H with the “no perforation zones” suggested by protestants would inhibit the opportunity of XTO and its lessors to recover their fair share of gas.

On the issue of the reasonableness of the proposed location of Well No. 4H, the examiners agree with protestants that, in all the circumstances, there is a less irregular location that is more reasonable than the proposed location. As proposed by XTO, Well No. 4H is 350 feet from the easternmost south line of the Sue Barnett Unit. This well location can be moved 20 feet to the south and still be “regular” to the easternmost south line. As compared to the proposed location, this alternative location would be less irregular to all unleased tracts lying to the north of proposed Well No. 4H, including protestants’ tracts. The evidence shows that there is no land-related, geological, or engineering reason why Well No. 4H could not be drilled at this less irregular location. XTO’s

counsel stated that it would be his recommendation to XTO that it not consider as adverse an examiners' recommendation that the requested Rule 37 exception be approved for this alternative location.

Appendix 4 to this proposal for decision is a plat which shows the alternative location recommended for approval by the examiners. The penetration point location recommended by the examiners is 330 feet from the south line and 1,623 feet from the interior southwest corner line of the Sue Barnett Unit, as shown on the Appendix 4 plat, and 1,242 feet from the north line and 6 feet from the west line of the BBB&C RR. Co. Survey. The terminus location recommended by the examiners is 330 feet from the easterly south line and 330 feet from the east line of the Sue Barnett Unit and 345 feet from the north line and 2,248 feet from the west line of the BBB&C RR. Co. Survey.

Based on the record in this case, the examiners recommend adoption of the following Findings of Fact and Conclusions of Law.

FINDINGS OF FACT

1. At least ten (10) days notice of this hearing was provided to all affected persons as defined by Statewide Rule 37(a)(2) and 37(a)(3) and the special field rules for the Newark, East (Barnett Shale) Field.
2. XTO Energy, Inc. ("XTO") seeks an amended drilling permit pursuant to the provisions of Statewide Rule 37 for the Sue Barnett Unit, Well No. 4H, a proposed horizontal well in the Newark, East (Barnett Shale) Field, Tarrant County, Texas.
3. Special field rules for the Newark, East (Barnett Shale) Field provide for 330' lease line spacing. As to horizontal wells, where the horizontal portion of the well is cased and cemented back above the top of the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the distance to the nearest perforation in the well, and not based on the penetration point or terminus. Where an external casing packer is placed in a horizontal well and cement is pumped above the external casing packer to a depth above the top of the Barnett Shale formation, the distance to any property line, lease line, or subdivision line is calculated based on the top of the external casing packer or the closest open hole section in the Barnett Shale. The standard drilling and proration unit for the Newark, East (Barnett Shale) Field is 320 acres. An operator is permitted to form optional drilling units of 20 acres.
4. The surface location for the proposed well is on the Sue Barnett Unit 2,031 feet from the north line and 603 feet from the east line of the Unit and 2,006 feet from the north line and 635 feet from the east line of the Rouche, P. Survey, A-1339, Tarrant County. The terminus of the proposed well is 346 feet from the north line and 330 feet from the east line of the Sue

Barnett Unit and 323 feet from the north line and 2,250 feet from the west line of the BBB&C RR. Co. Survey, A-203, Tarrant County. The penetration point of the proposed well is 1,220 feet from the north line and 1,583 feet from the east internal corner line of the Sue Barnett Unit as shown on the plat filed with the Form W-1.

5. Appendix 1 to this proposal for decision, incorporated into this finding by reference, is a plat depicting the Sue Barnett Unit and Well No. 4H as proposed by XTO. There are 703.514 acres within the perimeter of the Unit, of which 587.956 acres are under lease to XTO and pooled into the Unit. The Appendix 1 plat shows the boundary of the Unit and the boundaries of separate tracts within the perimeter of the Unit. Unleased tracts within the perimeter of the Unit are cross-hatched on the plat, and the two unleased tracts in which the protestants have an interest are shown in red.
6. The proposed surface location for Well No. 4H is the only surface location available to XTO for the drilling of wells on the Sue Barnett Unit, that is, the only surface location approved by the City of Arlington. XTO applied to the City of Arlington for another surface location in the northwest portion of the Unit, but was denied.
7. A Rule 37 exception is needed for the proposed Sue Barnett Unit, Well No. 4H because the section of the well proposed to be perforated is closer than 330 feet to the mineral property lines of certain tracts internal to the Unit that are unleased.
8. The XTO application is opposed by owners of two unleased tracts internal to the Sue Barnett Unit that are closer than 330 feet to the section of proposed Well No. 4H that will be perforated. The protestants' tracts are 86 feet and 197 feet, respectively, from the section of Well No. 4H proposed to be perforated.
9. The Barnett Shale is about 470 feet thick in the area of the Sue Barnett Unit and is present and productive throughout the area of the Unit.
10. Barnett Shale gas wells within five miles, plus 1,000 feet, of the terminus of proposed Well No. 4H recover an average of 39.2 MMCF of gas plus 658 MCF per foot of horizontal drainhole.
 - a. XTO studied production data, effective drainhole length, and decline curves to develop estimated ultimate recoveries for 52 Barnett Shale wells within this study area that had adequate production history and completion information to be included in the study.
 - b. XTO generated a plot of estimated ultimate recovery versus drainhole length for the 52 study wells ("regional recovery study"). A computer generated least squares regression of the data points on the plot developed a line through the data points with a positive slope and intercept that imply that a horizontal well in this area ultimately will recover 39.2 MMCF of gas plus 658 MCF for every foot of drainhole.

11. For the 587.95 acres under lease to XTO within the perimeter of the Sue Barnett Unit, gas in place in the Barnett Shale is about 138.6 BCF, and based on a 30% recovery factor, recoverable gas in place beneath the Unit is about 41.6 BCF. Recoverable gas beneath the two tracts in which the protestants own an interest is about 17,327 MCF in the case of the Kieffer tract and 14,640 MCF in the case of the Bui tract.
12. XTO made multiple attempts to lease all of the unleased tracts within the perimeter of the Sue Barnett Unit, but was not successful in leasing these tracts. XTO remains willing to lease the two tracts in which the protestants have an interest on terms that include a \$4,500 per net mineral acre bonus and a 25% royalty.
13. The number and location of unleased tracts within the perimeter of the Sue Barnett Unit have a limiting effect on wells than can be drilled at regular or Rule 37 locations from the only available surface location.
14. There are limited patches of regular locations on the Sue Barnett Unit where wells drilled from the only available surface location hypothetically might be landed, that is, locations that are 330 feet or more from any mineral property line. These limited areas of regular locations are shown in yellow on Appendix 1 to this proposal for decision incorporated into this finding by reference. In some instances, drilling to these areas from the only available surface location would require traversal of unleased tracts.
15. Assuming that it would be feasible to drill wells from the only available surface location that are landed in the limited “regular location” areas on the Sue Barnett Unit without traversing any unleased tracts, these regularly located wells would not provide XTO and its lessors a reasonable opportunity to recover their fair share of gas beneath the Unit.
 - a. Current recoverable gas beneath the 587.95 acres under lease to XTO within the perimeter the Sue Barnett Unit, assuming a 30% recovery factor, is about 41.6 BCF.
 - b. Vertical and horizontal wells that might be drilled from the only available surface location to reach the limited areas of “regular locations” on the Sue Barnett Unit without traversing any unleased tract collectively would recover only about 3.45 BCF.
16. Imposition of “no perforation zone” restrictions on proposed Well No. 4H such that the section of the well that could be perforated would be 330 feet or more from unleased tracts within the perimeter of the Sue Barnett Unit would leave a substantial amount of gas unrecovered and preclude XTO and its lessors from recovering their fair share of gas beneath the Unit.
 - a. Well No. 4H, as proposed to be drilled by XTO, would have drainhole length of 2,360 feet, and based on XTO’s regional recovery study, the well would recover about 1.6 BCF of gas.

- b. If Well No. 4H were “no perforation zone” restricted such that the section of the well that could be perforated were at least 330 feet from any unleased tract within the perimeter of the Sue Barnett Unit, this would permit only 481 feet of drainhole to be perforated. Based on regional recovery, this “no perforation zone” restricted well would recover only about 0.36 BCF of gas.
 - c. If Well No. 4H were “no perforation zone” restricted such that the section of the well that could be perforated were at least 330 feet from protestants’ unleased tracts only, this would permit only 1,289 feet of the drainhole to be perforated. Based on regional recovery, this “no perforation zone” restricted well would recover only about 0.9 BCF of gas.
 - d. If Well No. 4H were “no perforation zone” restricted such that the section of the well that could be perforated were at least 330 feet from protestants’ unleased tracts only, this “no perforation zone” restricted well would recover about 0.7 BCF of gas less than Well No. 4H would recover if drilled and completed as proposed by XTO. This compares to about 31,967 MCF of recoverable gas beneath protestants’ tracts.
17. There is a less irregular location 20 feet to the south of the proposed location where Well No. 4H can be drilled that is more reasonable than the proposed location. Well No. 4H at this alternative location is shown on the plat which is Appendix 4 to this proposal for decision incorporated into this finding by reference.
- a. The proposed location of Well No. 4H is 350 feet from the easternmost south line of the Sue Barnett Unit. This location could be moved 20 feet to the south and still be regular to the easternmost south line of the Unit.
 - b. All unleased tracts within the perimeter of the Sue Barnett Unit that are closer than 330 feet to the proposed location of Well No. 4H lie to the north of the proposed location. The alternative location 20 feet to the south of the proposed location would be less irregular to unleased tracts within the perimeter of the Unit.
 - c. There is no land-related, geological, or engineering reason why Well No. 4H cannot be drilled at the alternative location 20 feet to the south of the proposed location.
 - d. There is no evidence that drilling of Well No. 4H at the less irregular alternative location 20 feet to the south of the proposed location would cause the well to recover less gas than a well drilled at the proposed location.

CONCLUSIONS OF LAW

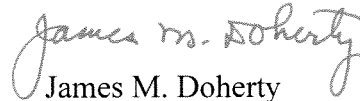
- 1. Proper notice of hearing was timely issued by the Railroad Commission to appropriate persons legally entitled to notice.

2. All things necessary to the Commission attaining jurisdiction over the subject matter and the parties in this hearing have been performed.
3. Approval of a Rule 37 exception for the Sue Barnett Unit, Well No. 4H, Newark, East (Barnett Shale) Field, Tarrant County, Texas, at the location specified in the Commission's final order is necessary to prevent confiscation and protect the correlative rights of mineral owners.

RECOMMENDATION

The examiners recommend that a Rule 37 exception for the Sue Barnett Unit, Well No. 4H, at the alternative location recommended by the examiners, be granted as necessary to prevent confiscation and protect correlative rights.

Respectfully submitted,



James M. Doherty
Hearings Examiner



Richard Atkins
Technical Examiner